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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: PACE MICRO TECHNOLOGY PLC
Application No.: 09/809,701
Filing Date: 03/15/01
For: IMPROVEMENTS TO BROADCAST DATA RECEIVERS
Art Unit: UNKNOWN

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TRANSMITTAL OF PRIORITY DOCUMENT

Director for Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

Enclosed herewith is a certified copy of British Patent Application No. 0006448.5 for which the above-identified patent application claims priority from.


If, for any reason, this priority document is not acceptable, please inform the undersigned as soon as possible.

Respectfully Submitted

HEAD, JOHNSON & KACHIGIAN

Date: 04/18/01

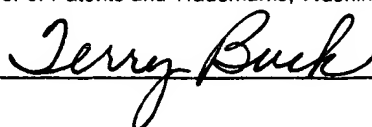
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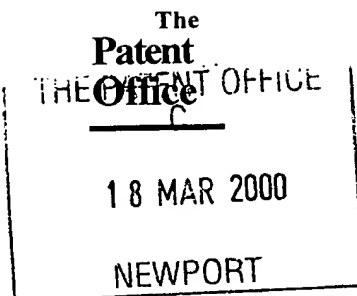
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1/77

20MAR00 E522257-1 D00346
P01/7700 0.00-0006448.5

The Patent Office

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(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

1. Your reference

GW-G29448

2. Patent application number
(The Patent Office will fill in this part)

0006448.5

18 MAR 2000

3. Full name, address and postcode of the or of each applicant (underline all surnames)

Pace Micro Technology Plc

Victoria Road
Saltaire
Shipley
BD18 3LF

Patents ADP number (if you know it) 7588569001

If the applicant is a corporate body, give the country/state of its incorporation

U.K

4. Title of the invention

Improvements to Broadcast data Receivers

5. Name of your agent (if you have one)

Bailey Walsh & Co.

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

5, York Place
Leeds
LS1 2SD

Patents ADP number (if you know it)

224001 ✓

6. If you are declaring priority from one or more earlier patent applications, give the and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
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Date of filing
(day / month / years)

7. If this application is divided or otherwise derived from an earlier UK application, the earlier application

Number of earlier application

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8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer "Yes" if:

Yes

- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
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Description 6

Claim(s)

Abstract

Drawing(s) 1 + 1

10. If you are also filing any of the following, state how many of each item.

Priority Documents

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Statement of inventorship and right to grant of a patent (*Patents Form 7/77*)

Request for preliminary examination and search (*Patents Form 9/77*)

Request for substantive examination (*Patents Form 10/77*)

Any other documents
(Please specify)

11. I/We request the grant of a patent on the basis of this application

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Date

G Wood

17. 03. 00

12. Name and daytime telephone number of person to contact in the United Kingdom

G Wood
0113 2433824

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Improvements to Broadcast Data Receivers

The invention to which this application relates is to improvements in electrical apparatus commonly known as broadcast data receivers or set top boxes. This apparatus is provided to allow the reception and processing of digital data to generate video, audio and/or text via a display means such as, for example, a television set which is provided with a display screen and speakers, or can be connected to speakers. The apparatus of the invention can be provided as a self contained unit which is provided to be connected to the television set or may indeed be provided as an integral part of a television set. The apparatus is provided to process digital data having been broadcast from a remote location by a data broadcaster such as for example a television company or a system provider.

The digital data is typically transmitted via one of a satellite transmission system, a cable system or terrestrial system and in each case, digital data is encoded prior to transmission, transmitted, received by appropriate apparatus and decoded and processed by the broadcast data receiver which is the subject of this application.

A service which is increasingly required to be provided via broadcast data receivers is to provide a guide to the user of the apparatus of the range of services which are available. One form of the guide is known as an electronic programme guide (EPG), and this typically includes a listing of the available channels of television programmes which can be selected by the user and associated information relating to the programmes. Upon the selection of an appropriate entry on the EPG, which is displayed on the display screen, the broadcast data receiver will select and generate the display of the selected programme so as to allow the selected programme to be viewed via the television set and/or

purchase information to be displayed to allow the user of the apparatus to select to purchase to view the selected programme.

The need for the electronic programme guide is largely generated by the wide range of television channels which can be selected to be viewed and is therefore becoming an increasingly standard feature of broadcast data receivers.

At the present, there are two ways in which the electronic programme guide function can be provided in broadcast data receivers. One means is to provide for the generation of an EPG from fully embedded code which is provided in a broadcast data receiver or alternatively, the EPG can be generated, as can a number of other possible applications, from software (hereinafter referred to as middleware) which allows the applications to be generated from the middleware software language.

The advantage of providing a fully embedded code to generate an EPG is that the generation of the EPG can be done relatively quickly upon the user selecting to view the EPG and changes in the EPG in response to user selections is undertaken in a relatively speedy manner. However, a disadvantage of a fully embedded EPG generation is that the code which is used is predetermined and is very difficult, if not impossible, to alter once the same has become embedded in the data receiver. In contrast, the advantage of the generation of EPG and other applications using middleware software language is that the EPG which is generated can be updated by the broadcaster who may transmit, download and instruct the execution of applications which can be added even when the broadcast data receiver is fully installed at the premises of the user. It will readily be appreciated therefore that both systems have advantages and disadvantages and an aim of the invention is to provide benefits to the user of the broadcast data receiver which

allows both the EPG and other applications to be generated using embedded and middleware sources as appropriate and thereby incorporate the advantages of both systems and to do so without the user necessarily being aware of how these advantages are provided.

In a first aspect of the invention there is provided broadcast data receiving apparatus provided to allow the generation of video, audio, and/or text on a display means connected thereto, said video, audio and/or text used in combination to generate television programmes and said broadcast data receiver capable of receiving data relating to a number of television channels, said broadcast data receiving apparatus further including means for generating an electronic programme guide for display on screen, said guide indicating to the user a range of television channels and programmes which are available for selection for viewing by the user using appropriate control apparatus and means for generating a number of other applications and characterised in that said electronic programme guide is generated from a first source in the form of embedded code provided in the broadcast data receiver and further and/or the other applications are generated from a second source in the form of software language provided in the broadcast data receiver and the utilisation of one or the other of said sources is controlled in response to a user selection.

It is envisaged that the control means for the electronic programme guide will, when activated by the user use the first source of the embedded code which allows the generation of the EPG and changes in the EPG in response to user selections to be done more quickly and efficiently.

When other applications are selected by the user however, such as for example, the selection of an internet web browser application,

and for applications where perhaps more changes to the applications over a frequent time interval, the use of middleware software language is more beneficial and the receiver will switch to use this source when the appropriate applications are selected.

By allowing, in accordance with this application, the ability to provide a receiver to generate applications from different sources and to switch between the source used to generate the same, so the advantages of both embedded and middleware language sources can be obtained for the user without the user being aware of the switch between sources.

In one embodiment, if a user is using the receiver and selects the generation of an EPG the EPG is generated from the embedded code in the broadcast data receiver. If, during the use of the EPG the user makes a particular selection by using a particular key of control means, such as a remote control device, then if the generation of the newly selected application is more advantageously performed and generated from the middleware, then the broadcast data receiver will be directed to generate the selected application from that source when the user selection is made. In one embodiment the selection may be made as a result of the selection of one of the options displayed on the EPG.

In order for the user to obtain the benefits, it is important that the underlying state of the software used for both sources is such that the change from one source to the other source is performed in an organised and stable manner within the broadcast data receiver with all resources freed for use so that in effect, the user does not readily appreciate that the sources used in response to their selection has changed.

A specific embodiment of the invention is now described with the accompanying drawings, wherein:-

Fig. 1 illustrates an EPG display; and

Fig. 2 illustrates a web browser display.

In accordance with the invention, there is provided a broadcast data receiver connected to or provided as an integral part of a television set. Part of the function of the broadcast data receiver is to generate an electronic programme guide (EPG) for display on a display screen of a television set. Fig. 1 illustrates a first type of EPG display 2 which is in the form of a grid 4 which includes a time bar 6 and a list of channels 8. For each row next to a channel, for example row 9 for Channel 1 there is provided one or a number of portions 10. Each of said portions represents a television programme and typically includes an indication 11 within the portion of the identity of the programme or, if the portion is too small, an indication of how the user may be able to identify a programme. The start and finish of each of the portions can be compared to the time bar 4 so that the first end 12 of the portion indicates to the user the start time of a programme and the end 14 of the portion indicates the end time of the programme.

It will therefore be appreciated that the visual representation of this type of EPG is relatively clear and simple to the user and provides a clear indication of television programmes that are available to view immediately and/or in the future. An important requirement is that the EPG is generated quickly when selected and it is found that using embedded code in the data receiver as a source is particularly advantageous.

If the user decides to select a particular portion, having highlighted the same using a selection device such as a remote control, then the broadcast data receiving means will cause that particular programme to be viewed if data is available and received for that programme at that time.

Alternatively if the user decides not to select a programme but to select an alternative application or function of the apparatus they can again use the remote control device and if the newly selected application, such as a web browser, is made the apparatus will utilise middleware software in the apparatus rather than embedded code and will make the selection in response to the remote control device command so that the display generated as shown in Figure 2 is generated from middleware rather than embedded code.

Thus, in accordance with the invention, if the user, when viewing Fig. 1 makes a selection to cause the generation of Fig. 2 or vice versa, then in addition to commencing to generate the display of Fig. 2, the broadcast data receiver also switches sources of software to allow the generation in response to the user selection. By doing this, and allowing this to happen repeatedly for various user selections during use of the apparatus, so the utilisation of the apparatus for the user is improved.

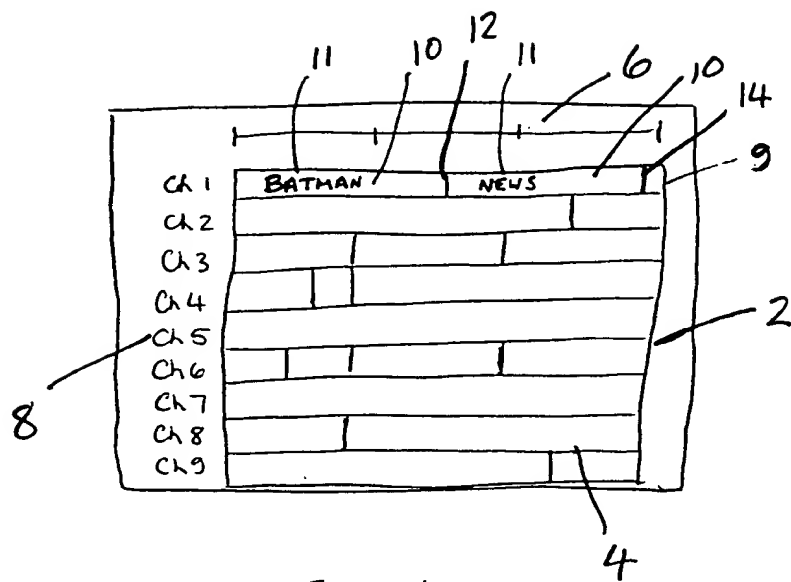


Figure 1

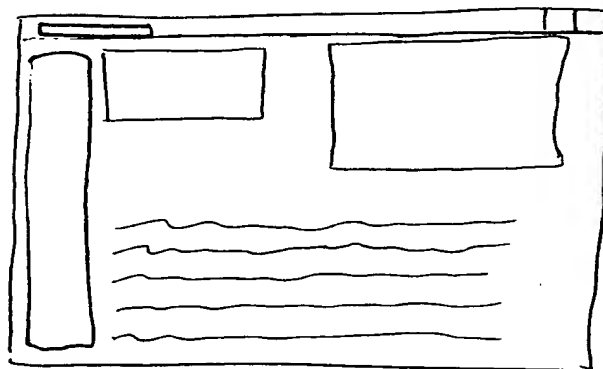


Figure 2

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